

Patent claims:

1. A measuring arrangement for measuring electrical signals on membrane bodies, containing an electrical measuring instrument (1), electrodes (2), a
5 membrane (3) containing connexins or innexins (4), and a membrane body (5) likewise containing connexins or innexins (6), **characterized in that** an electrically conducting access is produced from the membrane side facing away from the membrane body to the interior of the membrane body by gap junction channels (7).
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2. A method for measuring electrical signals on biological membrane bodies, **characterized in that** a measuring arrangement as claimed in claim 1 is used.
3. The method as claimed in claim 2, the measured electrical signal being
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 - i) the membrane potential of the membrane body,
 - ii) the electrical current flowing through the membrane, and/or
 - iii) the electrical capacitance of the membrane.
4. A method for identifying active agents which affect the properties of receptors
20 and/or ion channels, **characterized in that**
 - i) at least one membrane body containing said receptors and/or ion channels is brought in contact with at least one test substance, and
 - ii) at least one electrical signal is measured on the membrane body or the membrane bodies with a measuring arrangement as claimed in claim
25 1,those test substances which affect the measured electrical signal being selected as active agents.
5. A method for transporting substances into a membrane body or out from a
30 membrane body, **characterized in that** the substance enters the membrane body or leaves the membrane body through gap junction channels, the

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transport of the substance being driven by a concentration gradient, an electrical voltage difference or a pressure difference.

- 5 6. The measuring arrangement as claimed in claim 1, said membrane being configured as a supported bilayer.
7. The measuring arrangement as claimed in claim 1, with the membrane covering the end of a capillary.
- 10 8. Use of the measuring arrangement as claimed in claim 1 as a biosensor for the detection of substances.
- 15 9. Use of connexin-doped membranes as a substrate for the growth of living cells in cell culture, with the facility to monitor the electrical activity of the cells.
10. 10. The measuring arrangement as claimed in claim 1, characterized in that said membrane is in the form of a living cell.